

Explosives and Hazardous Materials Emergencies

BLET: 26R

TITLE: EXPLOSIVES AND HAZARDOUS MATERIALS EMERGENCIES

Lesson Purpose: To prepare the student to recognize and assist in potentially dangerous situations.

Training Objectives: At the end of this block of instruction, the student will be able to achieve the following objectives in accordance with information presented during the instructional period:

1. Demonstrate the ability to use a fire extinguisher to extinguish fires by completing a practical exercise.
2. Recognize and explain placards and sign shapes that indicate hazardous materials on vehicles.
3. Recognize, identify, and classify hazardous materials.
4. Observe, approach, and evaluate a hazardous materials incident.
5. Demonstrate the ability to respond to environmental crime and make an appropriate referral.
6. Describe the procedures used to operate a patrol vehicle while escorting hazardous materials.
7. Describe the officer's role as a first responder arriving at the scene of a hazardous materials incident or weapons of mass destruction incident.
8. Explain the proper procedures to be used by law enforcement officers in responding to reports of bomb threats and suspicious objects.
9. During a practical exercise, demonstrate the proper procedures to be used by law enforcement officers to search buildings and property to locate explosive devices and materials.
10. Recognize explosive and incendiary devices.

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11. Describe the procedures used in examining and/or detecting suspicious or potentially dangerous objects (i.e., suspicious packages, downed high-tension wires, and unusual odors).
12. Describe the procedures to be followed when responding to an incident involving an explosion.

Hours: Twelve (12)

Instructional Method: Conference/Practical Exercise

Materials Required: *2012 Emergency Response Guidebook*. Neenah, WI: J.J. Keller & Assoc., Inc.

Required Equipment and Training Aids: Audio-visual classroom equipment
Dry chemical fire extinguisher
Burn system for fire extinguisher exercise
Handouts
Video: *Fire Extinguishers: The First Responder*, The Phoenix Learning Group (1984)

References: *Bomb Threats and Physical Security Planning*. Washington, DC: Department of the Treasury, ATF P 7550.2, 7/87.

Bomb Summary - 1993. Washington, DC: U.S. Department of Justice, 1994.

2008 Emergency Response Guidebook. Neenah, WI: J.J. Keller & Assoc., Inc., 2008.

Emergency Response to Terrorism. Washington, DC: US Department of Justice, 1996.

Explosives Incident Report - 1993. Washington, DC: Department of the Treasury, ATF P 3320.4, 7/94.

Fire Protection Handbook. National Fire Protection, Seventeenth Edition.

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Hazardous Materials Training for First Responders.
Washington, DC: International Association of Fire
Fighters, 1990.

*Transportation of Hazardous Materials; Driving and
Parking Rules.* 49 C.F.R. Part 397, 1996.

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1. This lesson plan must be presented by an instructor currently certified by the North Carolina Criminal Justice Education and Training Standards Commission as a Specialized Hazardous Materials Instructor.
2. Arrangements must be made to have a building for students to practice the bomb search procedures covered in class.
3. Fire Extinguisher Practical Exercise:

Instructors must ensure that all safety precautions have been taken before students perform the exercise. A multi-purpose dry chemical fire extinguisher must be furnished so that each class member will get an opportunity to extinguish a fire. If using diesel fuel, a 3' x 3' metal concrete mix pan can be purchased and used for a burn pan. A UL approved fuel container safely filled with one or two gallons of diesel fuel should be used to store the fuel load. Safely pour approximately 1" of diesel fuel into the bottom of the metal pan and safely ignite the fuel using a long stick. Allow each student to safely approach the fire, discharge the appropriate amount of agent to extinguish the fire, place the pin back into the handle, and hand the extinguisher to the next student. Re-light the fuel load with the long stick and repeat the sequence until the last student has completed the practical. In lieu of using a burn pan and diesel fuel, school directors may authorize the use of a burn device whose flame is fueled by other sources, such as propane. These devices are often used by fire services trainers in community colleges and are commercially available. The instructor should place the burn pan or any other burn device in an area away from combustible materials. A stone or gravel parking area separated from any structure or vehicle is an excellent location. A 10' safety circle should be drawn around the burn system. Only one student and the instructor should be in this area at any one time. Instructors should hold the student as necessary to prevent getting too close to the fire. A second student may act as the safety officer and possess a second extinguisher in case it is needed.

In the event a burning ban is in effect in your area, instructors should complete the fire extinguisher exercise without lighting a fire. Check with your local fire marshal to determine if a burning ban is in effect.

4. The instructor will be required to use the most recent *Emergency Response Guidebook* and familiarize the student with how it is used. This book can be purchased by each student along with other course materials. An in-class quiz must be given on the use of the *Guidebook* (see instructor's handout, "Hazardous Materials Identification Exercise").

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5. Building Walk-Through Practical Exercise: Suspicious Packages Items
 - a) Instructors must locate and secure a building, preferably one with multiple rooms, floors and storage areas. This includes, but is not limited to school, government and/or other large office dwellings. Instructors are encouraged to locate and train role players to act as building “personnel.”
 - b) Before the practical exercise begins, instructors should re-emphasize that law enforcement officials serve as an **advisor only** under such circumstances. Instructors, acting as building “personnel” if necessary, must lead small groups of students (5 or less) into the structure. Using concepts learned in class, students are instructed to conduct a “walk-through.” Students must wear issued duty gear (particularly a radio) and be permitted to carry other personal electronic devices (pagers, cell phones, etc.) into the scene. Students should turn off all hand-held electronic equipment before entry and continuously ask personnel pertinent and necessary questions that identify specific locations within the structure that could house suspicious packages/items. At their discretion, instructors should place objects (boxes, brief cases, or other more “obvious” items) in general locations to see if students identify or question personnel about their relevance or normalcy. Once the “walk-through” has been completed, instructors are to critique the group and provide further explanation regarding student performance as needed.
6. The videos should be shown near the end of the portion of the lecture dealing with bomb search procedures. The instructor should review each prior to showing to ensure that there are no inconsistencies with policies in the instructor’s geographical area.
7. The section Hazardous Material Responses is provided to address the federal mandate prescribed in North Carolina Administrative Code 7C.0101(a)(26), requiring instruction for first responders at the awareness level. Instructors should have attended one of any number of courses offered in this area.
8. Instructors may supplement delivery efforts using other content experts to include bomb technicians, etc.
9. To promote and facilitate law enforcement professionalism, three (3) ethical dilemmas are listed below for classroom discussion. At their discretion, instructors must provide students with each ethical dilemma listed below. Sometime during the lecture, instructors should “set the stage” for the dilemma

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prior to taking a break. Instructors are encouraged to develop additional dilemmas as needed.

- a) Upon arriving at the scene of a potentially hazardous material spill, you realize you do not have your HAZ-MAT book with you as required by policy. You block the road and will not let anyone go past. Now what will you do?
- b) You respond to a fire call. You are the first one on the scene. Placards reveal hazardous chemicals, which when heated, cause harmful vapors to be released. You advise the fire commander of the placard and that breathing apparatus should be used. He advises you he is in charge of the fire and he will use an air pack when he thinks he and his men need them. He then tells you to go direct traffic. What will you do?
- c) You come back from lunch and as you enter the judge's chambers during a high profile trial, you observe a brown box with no identification markings on it sitting on the judge's desk. What will you do?

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I. Introduction

A. Opening Statement

NOTE: Show slide, “Explosives and Hazardous Materials Emergencies.”

Law enforcement officers must respond to many potentially dangerous situations without knowing the exact nature of the situation or what to expect. Officers, believing they are expected to take some action, may respond with limited knowledge and expose themselves or the general public to danger. In many instances, the appropriate officer response is simply reporting the incident to the proper agency.

By using guidelines presented in this lesson, officers will better understand their obligations and limitations when responding to potentially hazardous situations and minimize risk to the public and themselves.

B. Training Objectives

NOTE: Show slides, “Training Objectives.”

C. Reasons

Consistent with a law enforcement officer’s mission to protect life and property, these responsibilities are magnified when responding to situations involving explosives or hazardous materials. With this in mind, officers should be aware of such hazards and know how to respond.

II. Body

A. Using Fire Extinguishers

Using portable fire extinguishers requires training. Extinguishers should only be relied upon for specific size fires. When extinguisher capabilities are no longer sufficient, a safe evacuation should take place.

Virtually all fires are small in scale at first and may be extinguished quickly if the proper equipment is used promptly. Immediately notify the fire department when a fire is discovered. Notification should never be delayed and never assume an extinguisher will be sufficient.

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Fires that have spread (“incipient stage”) should be fought by the well-trained fire fighter(s). Officers encountering a large-scale fire should call the fire department immediately and evacuate.

1. Portable fire extinguishers and their successful use depend on the following conditions:
 - a) They must be stored/located properly and be in good working order;
 - b) They must be the proper kind for particular fire types (officers should be familiar with all fire extinguisher types used by their department);
 - c) The fire must be discovered while still small enough for the extinguisher to be effective; and
 - d) The fire must be discovered by a person ready, willing, and able to use the extinguisher.

NOTE: Show slide, “Fire Extinguisher.” Explain the nomenclature of the fire extinguisher.

2. Fire symbols defined:

NOTE: Show slide, “Fire Symbols.”

Class A: The symbol is the letter “A” within a green triangle.

Class B: The symbol is the letter “B” within a red square.

Class C: The symbol is the letter “C” within a blue circle.

Class D: The symbol is the letter “D” within a yellow star.

3. Fire classes defined:

NOTE: Show slide, “Fire Classes.”

- a) Class A: Ordinary combustible materials, such as wood, cloth and paper.
- b) Class B: Flammable or combustible liquids, flammable gases and greases.

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- c) Class C: Energized electrical equipment.
- d) Class D: Fire in certain combustible metals, such as magnesium, titanium, zirconium, sodium and potassium.

4. Using the extinguisher

After the correct classification of fire extinguisher has been selected for the job, the following general instructions apply to most portable fire extinguishers.

NOTE: Instructors should have a fire extinguisher on hand for demonstration purposes.

- a) Break the plastic or thin wire inspection band. Pull the pin at the top of the extinguisher, which keeps the handle from being pressed.
- b) If the hose assembly is clipped to the extinguisher body, release it and point it at the fire.
- c) Maintain a safe distance from the fire, but close enough to ensure discharged agent reaches base of flames. Most 2-5 gallon extinguishers have a horizontal stream range of 5-20 feet.
- d) Press the handle above the carrying handle to discharge the extinguishing agent. The handle can be released to stop the discharge at any time.
- e) Quickly sweep the nozzle back and forth into the flames of the fire to proficiently expel the extinguishing agent. Apply the agent just above the fuel load and near the base of the flame, termed the cracking zone. Make sure the fire is out.

NOTE: Show video, *Fire Extinguishers: The First Responder* (12 minutes).

NOTE: Demonstrate how to use a fire extinguisher and allow students to complete the practical exercise. Review safety precautions prior to the exercise. See Instructor Notes for complete directions.

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B. Hazardous Materials Responses

1. History

NOTE: Show slide, “History.”

- a) United States - hazardous materials generated
 - (1) Currently there are over 75,000 different hazardous materials in the United States, with new chemicals being produced every year.
 - (2) The U.S. Department of Transportation (DOT) estimates 10 percent of all commercial cargo is hazardous material.
 - (3) One and a half billion tons of hazardous materials are transported throughout the nation annually.

b) North Carolina - hazardous materials generated

NOTE: Show slide, “North Carolina Hazardous Materials Facts.”

- (1) It is estimated that two million tons of hazardous materials enter N.C. annually.
- (2) North Carolina ranks seventh in the United States in total tonnage, around 22 million tons.
- (3) In 2000 there were 1,015 accidental chemical releases reported to Emergency Management.

c) Hazardous materials response incidents - International/United States

NOTE: Show slide, “Hazardous Materials Response Incidents – International/United States.”

- (1) Bhopal, India

Involved accidental release of an unknown amount of methyl-isocyanate. Highly toxic resulting in at

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least 4400 deaths immediately and as many as 10,000 over next years.

(2) Waverly, Tennessee - 1978

A devastating railway incident occurs when a single tank car carrying 27,871 gallons of liquefied petroleum gas ruptures. An immense explosion follows, killing five immediately, eleven more as a result of injuries. Scores were severely burned. Explosion came forty hours after accident.

(3) Marshville, North Carolina

Occurred in April 1984 when 17 railcars derailed; two cars contained methanol which ignited and burned for two days. The entire town of Marshville was evacuated.

(4) Greenville, North Carolina

1999 - Two workers injured and numerous persons evacuated due to release of Bromine.

d) Injuries to responders

NOTE: Show slides, “Injuries During HazMat Response.”

(1) Volunteer firefighters – 10%

(2) Professional firefighters – 10%

(3) Unknown responders – 30%

(4) Police officers – 50%

2. Rules and regulations

a) OSHA 29 CFR 1910.120

Regulates response levels/training.

NOTE: Show slide, “Awareness Level Requirements.”

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- b) US DOT 49 CFR
 - (1) Regulates all commercial shipments of “hazardous materials” as defined in 49 CFR 171.8.
 - (2) North Carolina State Highway Patrol Enforcement Section is charged with enforcing DOT regulations.

- c) US EPA 40 CFR

Regulates handling, storage, etc., of substances that can be hazardous to the environment.

3. Incident Command System (ICS)

NOTE: Show slide, “ICS Basic Concepts.”

- a) History

Created during California wildfires of the 1970’s to consolidate command and control of various agencies
- b) Basic concepts

Each responder answers to one person, span of control is small. All persons are accounted for at all times. All resources are categorized and allocated to specific job tasks. Always an action plan in effect.
- c) Applicability to law enforcement

Allows us to integrate with fire, rescue and medical personnel in a smooth, effective manner. Control of situation shifts as more highly trained personnel arrive on scene.

4. Definitions/chemical characteristics

NOTE: Show slide, “Definitions.”

- a) Hazardous materials: Any material or substance that poses an *unreasonable* risk to safety, health and property.

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- b) Boiling point: The temperature at which a liquid has a vapor pressure that is equal to atmospheric pressure; varies widely.
- c) Flash point: The *minimum* temperature at which a material will give off ignitable vapors.
- d) Vapor density: The weight of a volume of pure vapor or gas compared to the weight of an equal volume of dry air. Vapor density of air is constant at one (1). Materials with a vapor density of less than one (1) tend to rise in air, while materials with a vapor density greater than one (1) tend to sink to low lying areas.
- e) Viscosity: The measure of a liquid's internal resistance to flow. The lower the viscosity the easier the flow.
- f) Specific gravity: A comparison of the density of a solid or liquid material to the density of water at a specific temperature. Water is considered to have a specific gravity (sp. gr.) of one (1). A material with a sp. gr. of less than one (1) will tend to float on water surface, while materials with a sp. gr. greater than one (1) tend to sink in water.
- g) Chronic exposure: Usually refers to an exposure that lasts over a long period of time with small constant doses. Example, breathing coal dust over a 20-year career.
- h) Acute exposure: Refers to a short-lived and usually high dosage exposure. Example, having a hazardous liquid spilled on skin surface and quickly washed off.
- i) Routes of exposure: Refers to those pathways that allow materials access to vital organs:

NOTE: Show slide, "Routes of Exposure."

- (1) Ingestion
- (2) Inhalation
- (3) Injection
- (4) Absorption

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5. Recognition, identification, and classification

a) Initial assessment

First responders must develop a habit of looking for clues signaling the presence of hazardous materials. They must also use all resources to further identify specific hazards involved. There are clues that can assist in detecting hazardous materials.

NOTE: Show slide, “Six Clues.”

(1) Occupancy/location

The occupancy and location of the site can provide valuable clues. If the processes, materials used, and products manufactured at a particular site are known, first responders can take more accurate precautions.

(2) Your senses

(a) Smell – If you can smell it, you are too close

Olfactory fatigue – The nose becomes saturated with a product and you think the product is gone; however, it still may be present and you are not able to smell it due to olfactory fatigue.

(b) Skin, nose, and eye irritation

(c) Sight - vapor clouds, color of smoke

(3) Container shapes

(a) Tank trucks

- i) Gasoline petroleum tanks
- ii) Corrosive liquid carriers
- iii) Propane tankers

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- iv) Cryogenic carriers
 - v) Dry bulk
 - (b) Railcars tanks
 - i) Pressurized
 - ii) Non-pressurized
 - iii) Bulk carriers
 - (c) Other containers
 - i) Drums
 - ii) Cylinders
 - iii) Carboys
- (4) Placards, labels, and markings

Placards, labels, and markings provide information on the type and hazards of products being transported or stored. There are a number of placarding systems required or strongly recommended for hazardous materials.

- (5) Shipping papers
 - (a) Safety Data Sheet (SDS)

NOTE: Show slide and refer students to handout, “Safety Data Sheet.”

Always required on delivery to fixed facility. Should be available to responders during inspections and emergency response. Papers are available most of the time. Generated by the manufacturer.

- (b) Bill of lading (roadway shipment)

Required to be within reach of the driver.

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- (c) Way bill (rail shipment)

Must be in possession of a train crew member.

- (d) Air bill (air shipment)

Possession of the pilot

- (e) Cargo manifest (waterway shipment)

On bridge of ship, unless unmanned barge

- (6) Driver information (information received from driver or other responsible party)

This information may or may not be valid and useful. Officers should use their best judgment in assessing reliability of this information.

- b) U.S. Department of Transportation (DOT) System

NOTE: Show slide, “DOT System.”

The U.S. Department of Transportation regulates the packaging and vehicles used in transporting hazardous materials and types of labels/placards that must be attached to containers and vehicles. Regulations are specific regarding what is classified as hazardous material and under what circumstances these materials should be identified during transportation.

Familiarity with the DOT system is essential because the placards and labels provide the initial and most valuable clue as to the type of hazardous material within the containers. The presence of a placard indicates that a dangerous substance is present; the information on the placard indicates the type of hazard.

The DOT placarding system is not flawless. In addition to the fact that smaller quantities of some materials in non-bulk containers may not need to be placarded, there are other problems associated with the DOT system. For example:

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- (1) Placards and labels may not be accurate.
- (2) Secondary hazards may not be identified by placards.
- (3) The degree or severity of the hazard is not conveyed.
- (4) The DANGEROUS placard is vague and of little use.
- (5) Shippers may not always comply.
- (6) Enforcement of the regulations is difficult.

Consequently, first responders should not rely exclusively on placarding (or lack of placarding) as a source of information.

United Nations (UN) Identification Numbers: The other United Nations system for identifying hazardous materials shipments has been adopted by U.S. DOT. This system calls for the use of a UN Identification Number on most bulk shipments of hazardous materials. This four-digit number must be displayed in a white, rectangular box in the center of the appropriate placard, on an orange panel affixed near the placard, or (rarely) in a white, rectangular box on the container. These numbers can be cross-referenced with certain sources, such as *2012 Emergency Response Guidebook*, to more accurately identify the contents of the container.

c) Nine DOT classes of hazardous materials

- (1) Explosives (DOT class 1)

NOTE: Show slide, “Class 1: Explosives.”

- (a) Definition: Materials that are capable of an instantaneous release of energy
- (b) DOT divisions of explosives

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- 1.1 Materials with a mass explosion hazard
- 1.2 Materials with a projection hazard
- 1.3 Materials with a predominantly fire hazard
- 1.4 No significant blast hazard
- 1.5 Very insensitive explosives; blasting agents
- 1.6 Extremely insensitive detonating articles
- (c) Examples: Dynamite, Nitroglycerine, Blasting caps
- (2) Gases (DOT class 2)

NOTE: Show slide, “Class 2: Gases.”

- (a) Definition: Materials shipped in a gaseous form, usually under pressure.
- (b) Three DOT divisions
 - 2.1 Flammable gas - butane, propane, butadiene, etc.
 - 2.2 Non-flammable, non-toxic compressed gasses
 - 2.3 Poison gas - mustard, sarin, etc.
- (c) Examples: Helium, Carbon Dioxide, Methane, Anhydrous Ammonia
- (3) Flammable liquids/combustible liquids (DOT class 3)

NOTE: Show slide, “Class 3: Flammable Liquids.”

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- (a) Flammable = flashpoint below 141 degrees Fahrenheit
 - (b) Combustible = flashpoint from 141 degrees Fahrenheit to 200 degrees Fahrenheit
 - (c) Examples: Gasoline, Turpentine, Acetone
- (4) Flammable solids (DOT class 4)

NOTE: Show slide, “Class 4: Flammable Solids.”

- (a) Definition: Solid materials that ignite readily and burn vigorously.
 - (b) DOT divisions
 - 4.1 Flammable solids
 - 4.2 Spontaneously combustible
 - 4.3 Dangerous when wet
 - (c) Examples: Phosphorous, Sodium, Magnesium
- (5) Oxidizers (DOT class 5)

NOTE: Show slide, “Class 5: Oxidizing Substances.”

- (a) Definition: Any substance that yields oxygen readily to stimulate the combustion of organic materials.
- (b) DOT divisions
 - 5.1 Oxidizers
 - 5.2 Organic peroxides

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(c) Examples: Hydrogen Peroxide, Chlorate, Pure Oxygen

(6) Poisonous and toxic substances (DOT class 6)

NOTE: Show slide, “Class 6: Toxic Materials.”

(a) Definition: Any substance that causes harm to living organisms.

(b) DOT divisions

6.1 Toxic materials

6.2 Infectious substances

(c) Examples: Strychnine and Arsenic

(7) Radioactive materials (DOT class 7)

NOTE: Show slide, “Class 7: Radioactive Materials.”

(a) Definition: Any substance that spontaneously emits ionizing radiation.

(b) Examples: Uranium, Thorium, Tritium

(8) Corrosives (DOT class 8)

NOTE: Show slide, “Class 8: Corrosives.”

(a) Definition: Any substance that causes visible destruction of human skin tissue on contact or that has a corrosion rate on steel.

(b) Examples: sulfuric acid and acetic acid

(9) Miscellaneous dangerous goods (DOT class 9)

NOTE: Show slide, “Class 9: Miscellaneous Dangerous Goods.”

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(a) Definition: Materials that pose limited risks during transport and do not fit into the other eight categories.

(b) Examples: flares, cigarette lighters

NOTE: Show slide, “Rule of Thumb.”

d) You should be far enough away from the scene to cover it with your thumb!

NOTE: Show slide, “Overturned Tractor Trailer.”

e) This was fuming nitric acid overturned on I-95 in 2000. Note orange cloud above tank.

NOTE: Show slide, “Overturned Explosive Truck.”

f) This was approximately 3600 pounds of ANFO (including boosters and caps) Highway 64 East of Raleigh 2000.

6. Use of the *Emergency Response Guidebook*

NOTE: Show slide, “Using the Guidebook.”

NOTE: Have students examine their *Emergency Response Guidebook*. Point out the different section that can be identified by observing the different colors indicated on the edge of the book. This allows user to reference the book quicker during an emergency.

a) Shipping paper, bills of lading, manifest, etc.

NOTE: Show multiple slides of shipping paper locations for various types of vehicles.

Shipping papers are an excellent reference for cargo. Every effort should be made to obtain this from the proper authority or person in charge.

b) CHEMTREC

NOTE: Explain to the student the role of CHEMTREC.

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- c) Alphabetical index

NOTE: Explain to the student the proper procedure for using the alphabetical index and the relationship it has to the numerical index. Explain the importance of the bold print and coloring code.

- d) Numerical index

NOTE: Explain to the student the proper procedure for using the numerical index and the relationship it has with the alphabetical index (which is cross indexed between UN and NA numbers).

- e) Response guides

NOTE: Explain the use of the emergency response guides as it relates to the potential hazards and emergency action. Use Guide 111 as a generic guide to walk them through an example of a spill.

- f) Isolation and evacuation tables

NOTE: Explain to the student the difference between isolation and evacuation as it relates to the size of the spill and the need for downwind evacuation.

- g) Using the *Guidebook*

- (1) Step one

- (a) Identify the material by finding one of the following:

- i) The 4-digit ID number on a placard, orange panel or shipping document.
 - ii) The name of the material on a shipping document, placard, or package.
 - iii) If an ID number or the name of the material cannot be found, find the

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corresponding placard in front of *Guidebook* and use referenced response guide number.

- iv) If there is no identifying information and the material is believed to be hazardous, use Guide 111.

(2) Step two

- (a) Find the material's 3-digit guide number in either:
 - i) The ID Number Index - the yellow-bordered pages in the *Guidebook*
 - ii) The Name of Material Index - the blue-bordered pages in the *Guidebook*
- (b) If the guide number is supplemented with the letter "P," it indicates that the material may undergo violent polymerization if subjected to heat or contamination.
- (c) If the index entry is highlighted, look for the ID number and name of the material in the table of initial isolation and protective action distances (the green-bordered pages). If necessary, begin protective actions immediately (see sections on Protective Actions).

(3) Step three

Turn to the numbered Guide (orange-bordered pages) and read carefully and completely (both pages).

NOTE: Show slide and refer to the handout, "Hazardous Materials Identification Exercise." Have students use the *Guidebook* to complete exercise.

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NOTE: Show multiple slides of placards and have students use the *Guidebook* and identify each.

7. Transportation hazards and response considerations

NOTE: Explain to the student that chemical spills involving transportation modes may present unique problems in that the spill will require immediate action, will be outside of the normal work space, be associated with the environment and the general population, and will lack major control devices needed to alleviate the situation.

a) Incident types

NOTE: Show slide, “Incident Types.”

(1) Highway

NOTE: Explain to the student that motor vehicle transportation presents the greatest possibility for chemical spills and constitute the larger percentage of accident spills for emergency responders. Normally single commodity unless waste shipment.

(a) Wrecks - low to moderate spills

(b) Leaks and spills

(c) Fire

(2) Railway

NOTE: Explain to the students that railway is unique in that the most of the railway accidents involve serious exposure risks since large quantities and types of chemicals are involved. In addition, many times railway accidents occur in remote places with little access to emergency equipment and personnel.

(a) Train derailment

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(b) Container breach

(3) Waterways

NOTE: Explain to the students that even though waterway spills are less in number, they present major problems to the environment and constitute a major containment and clean-up problem.

(4) Airway

NOTE: Explain to the student the different types of chemicals unique to air traffic and particularly stress the need for caution concerning military aircraft.

(a) Commercial (passenger and freight)

(b) Military

(c) Freight facilities

(5) Pipeline

NOTE: Explain to the student that recent development of pipeline transportation of hazardous material has created new risks to the population due to spills and explosions.

(a) High volume release

(b) Single commodity

(c) Strategic cut-off valves

b) Approach considerations

NOTE: Show slide, "Approach Considerations."

Use all available information for early recognition of potential hazards.

(1) Geography and topography

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Approach scene from uphill and upwind

- (2) Weather conditions
 - (a) Temperature extremes, lightening, humidity, precipitation, and wind may all negatively affect the outcome of an incident.
 - (b) In the event of a hazardous materials spill or release—particularly when a gas is involved—wind can become an important factor. The effect of wind can be both positive and negative with regard to the dispersion or dissipation of gas.
 - (c) Precipitation can be a major problem in itself. Especially when it is in the form of heavy rain, snow, sleet, or freezing rain. These conditions increase the likelihood of transportation accidents involving hazardous materials, as well as emergency apparatus. Response times may be affected. Footing can be a serious hazard for responders and the public attempting to evacuate.
- (3) Exposure - recognize the potential for exposure to victims, response personnel and the public. Follow evacuation recommendations from *Guidebook*.
- (4) Five steps to awareness

NOTE: Show slide, “Five Steps to Awareness.”

- (a) Detection
- (b) Recognition
- (c) Identification
- (d) Notification
- (e) Call for resources

Explosives and Hazardous Materials Emergencies

8. Escorting explosives and hazardous materials

NOTE: Show slide, “Escorting Hazardous Materials.”

- a) Compliance with laws and regulations
 - (1) Every state must be in compliance with the federal standards for transporting explosives and hazardous materials.
 - (2) In addition, every vehicle transporting explosives and hazardous materials must be in compliance with the laws, ordinances, and regulations of the jurisdiction(s) through which it is being operated.
 - (3) The vehicle must observe the parking restrictions set forth in the U.S. Department of Transportation Regulations.
- b) Routing – non-radioactive hazardous materials (NRHM)
 - (1) The carrier must comply with NRHM routing designations of the state. **Check with North Carolina State Highway Patrol Motor Carrier Section.**
 - (2) The vehicles must be placarded or marked in accordance with U.S. Department of Transportation regulations.
 - (3) Vehicles carrying explosives or hazardous materials which **are not** subject to a NRHM routing designation should operate the vehicle over routes which do not go through or near:
 - (a) Heavily populated areas
 - (b) Places where crowds are assembled
 - (c) Tunnels
 - (d) Narrow streets or alleys

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- c) Any request for the escorting of hazardous materials should be coordinated with the North Carolina Highway Patrol.
- d) The types of explosives or hazardous materials should be considered when determining whether or not to use blue light and/or other emergency warning equipment. It may be better not to use such equipment in order to avoid attracting attention to the shipment.
- e) Officials may wish to consider keeping the knowledge of such shipments and the routing of such shipments on a “need to know” basis to avoid unnecessary alarm in the community.

9. Fixed facilities

NOTE: Show slide, “Fixed Facilities.”

- a) Type of facility
 - (1) Manufacturing/processing
 - (2) Distribution/warehousing
 - (3) Retails sales
 - (4) Consumer services and office facility
 - (a) Farms - pesticides
 - (b) Homes - pesticides, flammables, corrosives
 - (c) High school - chemistry laboratory
 - (d) Local swimming pool - chlorine
 - (5) Utilities/waste treatment
- b) Types of incidents
 - (1) Fires
 - (2) Leaks and spills

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- (3) Gas releases - if gas stored
- c) Response to fixed facilities
 - (1) Reporting procedures
 - (a) Right to know (North Carolina Department of Labor)
 - (b) SDS - Must provide upon request
 - (c) Response planning
 - (2) Placarding
 - (a) National Fire Protection Association (NFPA) System

NOTE: Show slides, “NFPA 704 Marking System.”

The National Fire Protection Association (NFPA) has a marking system for **fixed** site installations that indicates the dangers associated with various hazardous materials. This marking system is **not** required in transportation.

This system, the NFPA 704 Marking System, uses a diamond divided into four specific areas. The areas indicate Health Hazard (blue), Flammability (red), Reactivity (yellow), or Specific Hazard (white) risks associated with each material.

The Health, Flammability, and Reactivity Hazards are ranked from “0” to “4” with 0 indicating no risk and 4 indicating the greatest risk. The Specific Hazard area usually contains a special symbol or letter indicating a specific danger. The table on the following page describes the 0-4 ratings.

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NFPA 704 MARKING SYSTEM

NUMBER	HEALTH HAZARD	FLAMMABILITY	REACTIVITY
4	Extremely toxic; even small amounts may be fatal. Structural fire fighting gear will not provide protection.	Very flammable gases or very volatile flammable liquids.	Capable of detonation or explosive reaction at normal temperatures and pressures.
3	Toxins or corrosives that are extremely hazardous to health but less so than number 4. Structural fire fighting gear may or may not be sufficient.	Capable of ignition under almost all normal conditions.	Capable of detonation or explosive reaction if there is a strong ignition source or high temperature.
2	Moderately toxic; hazardous to health but less so than number 3. SCBA and eye protection may be sufficient.	Capable of ignition with moderate heat.	Normally unstable and readily undergoes violent chemical change, but not capable of detonation. Also includes water-reactive materials.
1	Irritating or only slightly hazardous to health. SCBA may be required.	Requires heating before ignition will occur.	May become unstable under heat or pressure.
0	No unusual hazard.	Will not burn.	Normally stable even under fire conditions; not reactive.

(b) Other placarding/label considerations

In addition to the placards and labels described on the previous pages, First Responders should also be aware of the following hazards that may or may not require identification.

i) Other Regulated Material (ORM)

An ORM material means a material such as a consumer commodity, which, although otherwise subjected

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to the hazardous materials regulations, presents a limited hazard during transportation due to its form, quantity and packaging. ORMs include ammonium fluoride, asbestos, and a number of other products. ORMs do not require placarding. However, DOT specifies shipping and packaging containers for these materials.

ii) Cancer causing agents

The Occupational Safety and Health Administration (OSHA) requires that these substances be labeled as such.

iii) Pesticides

The Environmental Protection Agency (EPA) requires that manufacturers' pesticide labels contain the signal words DANGER (most toxic) or CAUTION (least toxic).

10. Local plan

NOTE: Explain to the student the need for a local plan and how local plans have been developed over the past several years.

a) Role of responding agencies

NOTE: The student should be made aware of the jurisdictional authority of all the possible responders mentioned in the local plan.

(1) Fire department - the primary responder

(2) On-the-scene Commander (OSC) should be the fire chief due to training and resources

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- b) Responsibilities/authorities
 - (1) Federal agencies
 - (2) State agencies
 - (3) Local agencies
 - (4) Owner/operator

NOTE: The student should be taught the method of coordination, cooperation, and communication that is outlined in the local plan.

11. Environmental crimes

NOTE: Show slide, “Environmental Crimes.”

When an officer responding to an explosive or hazardous material incident becomes aware of circumstances that indicate the possibility that an environmental crime has been committed, they should report it to the proper authority for further investigation.

- a) With regard to transportation violations, they should be reported to the nearest North Carolina State Highway Patrol Motor Carrier Section.
- b) Other environmental crimes such as toxic spills, waste spillages, etc., should be reported to the North Carolina Department of Environment and Natural Resources.

C. Response to Weapons of Mass Destruction (WMD) Events

NOTE: Show slide, “Law Enforcement Response to WMD Incidents.”

For many years, terrorism was a “foreign” problem. Law enforcement officers were busy fighting traditional criminal activity. Increases in violent crime in many communities generated political pressure for law enforcement agencies to develop and employ new, more effective

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strategies against street criminals. In the midst of all this turmoil, several major incidents have brought the terrorist threat to America— bombings at the World Trade Center and the Murrah Federal Building in Oklahoma City and most recently the terrorist attacks on the Twin Towers and the Pentagon. It is time for law enforcement agencies to turn the focus, at least in part, to address terrorism and weapons of mass destruction (WMD) nationwide.

1. Definitions of weapons of mass destruction (WMD)

a) Title 18 US Code

NOTE: Show slide, “Title 18 US Code.”

- (1) Poison gas
- (2) Any weapon involving a disease organism
- (3) Any weapon designed to release radiation or radioactivity at a level dangerous to human life
- (4) Any destructive device as defined in Section 921, Title 18

b) Destructive devices (Section 921, Title 18 US Code)

NOTE: Show slide, “Destructive Devices.”

Any explosive, incendiary or poison gas:

- (1) Bomb
- (2) Grenade
 - (a) Rocket having a propellant charge of more than four ounces
 - (b) Missile having an explosive or incendiary charge of more than one-quarter ounce
 - (c) Mine

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- (d) Device similar to any of the devices described in the preceding clauses
 - (3) Any type of weapon (other than a shotgun or a shotgun shell) which may be readily converted to expel a projectile and with a bore of more than one-half inch in diameter.
 - (4) Any combination of parts from which a destructive device can be assembled.
- c) Terrorism defined

NOTE: Show slide, "Terrorism Defined."

- (1) USC Title 22, Section 2656f(d)

Premeditated, politically motivated violence perpetrated against noncombatant targets by sub-national groups or clandestine agents usually intended to influence an audience.

- (2) U.S. Department of Justice

A violent act or an act dangerous to human life, in violation of the criminal laws of the United States or any segment to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.

- (3) The Federal Bureau of Investigation (FBI)

The unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.

- (4) Domestic terrorism

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NOTE: Show slide, “Domestic Terrorism.”

Involves groups or individuals who are based and operate entirely within the United States and Puerto Rico without foreign direction and whose acts are directed at elements of the United States Government or population. *Example: April 1995 Oklahoma City Federal Building bombing, 600 wounded, 169 dead.*

- (5) International terrorism

NOTE: Show slide, “International Terrorism.”

Foreign based and/or directed by countries or groups outside the United States. *Example: World Trade Center Bombings 09/11/2001.*

- d) Responsibilities as outlined in Presidential Decision Directive - 39 (PDD-39)

NOTE: Show slide, “Presidential Decision Directive – 39.”

- (1) June 1, 1995 U.S. policy on counter terrorism as a result of the April 19, 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City.
- (2) Under the provision of PDD-39, the federal government has the authority to intervene in a suspected or confirmed WMD incident.
- (3) Two primary federal agencies:
- Federal Bureau of Investigations (FBI)
Federal Emergency Management Agency (FEMA)
- (4) The FBI is the lead agency for crisis management during terrorist incidents involving nuclear, biological and chemical materials.

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- (5) The FEMA is the lead agency for recovery and consequences management during terrorist incidents involving nuclear, biological and chemical materials.
 - (6) The Federal Response Plan (FRP) is used as the vehicle to coordinate consequence management efforts under PDD-39. The plan directs other federal agencies to support the FBI and FEMA as needed.
- e) Five categories of weapons of mass destruction materials

NOTE: Show slide, “B-NICE.”

B-NICE

- (1) Biological

There are several biological agents that can be employed as terrorist weapons. The four common types of biological agents are bacteria, viruses, rickettsia, and toxins.

- (2) Nuclear

Nuclear terrorism can occur under two different scenarios. One involves the detonation or threatened detonation of a nuclear bomb. The other involves the dispersion of radiological material using a conventional explosive or other dispersal device.

- (3) Incendiary

An incendiary device is any mechanical, electrical or chemical device used to intentionally initiate combustion and start a fire.

- (4) Chemical

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Chemical agents can be classified in five categories: nerve agents, blister agent, blood agents, choking agents and irritating agents.

(5) Explosive

Explosive devices are the most common used WMD. Approximately 70 percent of all terrorist attacks worldwide involve explosives.

f) Routes of exposure

NOTE: Show slide, “Routes of Exposure.”

(1) Inhalation

(2) Ingestion

(3) Absorption

(4) Injection

2. Incident priorities

NOTE: Show slide, “Incident Priorities.”

The first step in providing adequate protection for people and property during a WMD incident is to establish priorities. Every responding agency and individual responder must understand those priorities and focus effort and resources on meeting requirements in the context of those priorities. For most WMD incidents, those priorities are:

a) Life safety

(1) Self-preservation

(2) First responders

(3) Part of problem or part of solution?

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- b) Incident stabilization
 - (1) Secure scene
 - (2) Direct victims
 - (3) Reduce contamination
 - (4) Make notifications
- c) Property and environmental concerns

Protection of the environment becomes a priority when life safety and incident stabilization requirements have been accomplished. Specially trained first responders who have appropriate protective clothing and equipment typically accomplish protection of the environment. In most situations, hazardous materials response teams, provided by the fire department, perform this function.

- 3. Levels of protection/protective clothing and equipment
 - a) Exposure

NOTE: Show slide, “Exposure.”

The concept of “exposure” is critical to understanding techniques for avoiding injury or death from WMD. In order for an exposure to occur, there has to be a dose or concentration of the agent present in sufficient quantity to cause harm; the individual must also be in the agent’s presence for a given period of time. An oversimplified equation representing this concept is:

$$\text{Exposure} = \text{Dose} \times \text{Time}$$

Exposure vs. Contamination

Most law enforcement officers have little more than their uniforms to protect them from WMD materials. Some departments are purchasing protective masks and other equipment items for selected officers. However, it is likely

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that the first responding officer to a WMD incident will be ill-equipped and poorly-prepared to protect him/herself from possible injury or death. For that reason, it is imperative that law enforcement officers avoid contamination, if practicable.

It is of some value, however, for law enforcement officers to familiarize themselves with common items of protective equipment currently used by organizations properly equipped to respond to incidents where there is significant risk of chemical, biological or radiological contamination.

- b) Levels of protection are divided into four categories, or levels, with Level D representing the least protection, and Level A representing the greatest protection.

NOTE: Show slide, “Levels of Protection.”

- (1) Level D

Your uniform or common street clothes, represents Level D. It is appropriate when there is no respiratory or skin hazard. It provides no protection from WMD agents.

- (2) Level C

The military’s battle dress over-garment with protective mask represents Level C. It includes chemical resistant clothing with a hood and an air-purifying respirator. Level C should only be used when there is no splash hazard; the air respirator can remove all anticipated contaminants and concentrations of chemical materials. Level C also provides adequate protection against airborne biological agents and radiological materials.

- (3) Level B

Level B includes a non-encapsulating chemical splash resistant suit with hood and SCBA. It provides maximum respiratory protection with less

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skin protection, because it is not fully encapsulated. The air tank is outside of the suit. It protects against agents that present no skin vapor hazard and is adequate when there is a low liquid splash potential. Level B is also used in low oxygen environments.

(4) Level A

Level A includes a totally encapsulated chemical resistant suit, with self-contained breathing apparatus (SCBA) or supplied air with escape. It provides maximum respiratory and skin protection and is used when there is a high level of liquid splash potential, a toxic respiration and skin vapor hazard, or where the chemical agent is unidentified.

Individuals entering a Hot Zone (the area immediately surrounding the contaminated location) should normally be in Level A. Once the agent has been identified, the level of protection may be reduced. This is standard policy in most organizations that respond to hazardous material or WMD incidents. The lesson in this policy is simple. If an individual does not have Level A protection, they should not be in the immediate area of contamination. Since patrol officers who will normally be among first responders do not have this equipment, they should not be in the vicinity of the Hot Zone. They should be as far away from the point of contamination as practicable in the situation. Officer uniforms (Level D) provide no protection from chemical or biological materials.

c) Time, distance and shielding

NOTE: Show slide, “Self Protection.”

Protection of the first responder is based on avoiding or minimizing exposure through the principles of time, distance and shielding.

(1) Time

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Use time as a tool to protect yourself at a crime scene. Avoid exposure, if at all possible. If you are exposed accidentally to WMD material, leave the contaminated areas as quickly as possible. The less time you spend in the affected area, the less likely you are to become injured. Minimizing time spent in the affected area will also reduce the chance of contaminating other areas of the crime scene.

(2) Distance

Maximize your distance from the hazard area or the projected hazard area. Generally speaking, you should stay upwind, uphill and upstream of contamination. Recommended standoff distances are provided in the *Emergency Response Guidebook*.

(3) Shielding

Use appropriate shielding to address specific hazards. Vehicles, buildings or natural terrain features can provide shielding from some WMD hazards. However, law enforcement officers are normally not issued chemical protective clothing and equipment; as a consequence they have limited shielding from chemical or biological materials.

Responders should use all three forms of protection whenever possible. Personal protection also involves the use of effective tactics when responding to and operating at the incident scene. Some of these tactics are:

Always park vehicles facing away from ground zero at the incident scene. If you have to evacuate the area, you can drive a lot faster in forward than you can in reverse.

Tie short strands of tape onto tape used to delineate the perimeter of the crime scene. Those short strands can be used to identify wind direction and estimate wind speed.

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Avoid any movement--on foot or by vehicle--through contaminated areas or suspected contaminated areas. When operating in the vicinity of contaminated areas, don't step in puddles or on surfaces that appear to be coated with any foreign material. Consider your probable level of protection.

Keep clothing and material that could afford some limited protection in a convenient location. Rubber boots, raincoats, rain hats and similar items can be used to provide some EMERGENCY PROTECTION. However, don't assume that any of these items will override a level of protection adequate for operating in a contaminated area. Law enforcement officers are seldom issued protective clothing and equipment suitable for operations in contaminated areas.

Avoid direct contact with individuals or objects that may have been contaminated by chemical, biological or radiological material. This is a difficult requirement for law enforcement officers who are trained to take action to resolve problems. Avoiding contact with an individual who clearly needs first aid or medical treatment runs against that basic instinct. Remember, however, that a contaminated law enforcement officer is of little or no value to others in mitigating the effects of WMD materials.

Make certain that you fully understand protocols and procedures for emergency evacuation if you are inadvertently exposed to chemical, biological or radiological materials. You should also understand basic self-aid procedures, including "hasty" decontamination methods and antidotes that will neutralize the effects of common WMD materials. For example, remember that you should not rinse contaminated areas of skin with a steady stream of water if they are covered with a persistent nerve agent or a blister agent. Rather, you should "blot"

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the areas with a moistened cloth that is rinsed frequently to remove chemical residue.

Remember the routes of exposure for various chemical, biological and radiological materials. If you are inadvertently exposed to an agent that is inhaled (as its principal route of exposure), you should hold your breath until you are safely outside of the contaminated area.

d) Types of harm (TRACEM)

NOTE: Show slide, “TRACEM.”

- (1) *T – Thermal hazards* occur when there is the potential of human exposure to products that are extremely hot or extremely cold. Explosives and incendiaries produce significant thermal hazards.
- (2) *R – Radiological hazards* occur then there is the potential for human exposure to alpha, beta, gamma or neutron radiation. Radiological hazards are present following a nuclear detonation or exposure of victims to radiological materials in unshielded containers.
- (3) *A – Asphyxiation hazards* occur when substances such as argon, helium, nitrogen and other inert gases displace oxygen in the air. Other chemical substances such as carbon monoxide interfere with the blood’s supply of oxygen by preventing oxygen from reaching the cells.
- (4) *C – Chemical hazards* occur when there is the potential for human exposure to toxic chemical substances. Chemical weapons – nerve, blood, blister and choking agents – produce chemical hazards. In addition, industrial chemicals such as chlorine, phosgene and some insecticides can cause substantial physical damage to human subjects.
- (5) *E – Etiological hazards* include bacteria, viruses or toxins that can cause disease or injury to human

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subjects. Weaponized material of this kind is extremely dangerous because its use may go undetected until it is too late to successfully treat victims exposed to it.

- (6) *M – Mechanical hazards* include projectiles and shrapnel that can cause lacerations, abrasions and punctures to unprotected persons.

4. Five phases of a WMD incident

NOTE: Show slide, “Preventing WMD Events.”

a) Prevention/deterrence

Most phased models for emergency response begin with the notification phase—the point at which a threat has been made or an incident has actually occurred. This is understandable because emergency response agencies are just what their titles imply—they are organizations that respond to events. Law enforcement officers typically respond to complaints, requests for assistance or reports of criminal activity. Firefighters typically respond to fires or other similar emergencies. Emergency medical service personnel respond when emergency medical treatment is required.

There is a growing realization, however, that efforts to prevent or deter terrorists can have significant payoff. When a terrorist turns away from a target in a community, lives and property are spared. When a terrorist is taken into custody before executing an attack, we not only spare lives and property in the short term, but also reduce the terrorists’ opportunities for future attacks against other targets.

It is critical that the prevention and deterrence phase is a process that begins when a law enforcement officer’s shift begins and runs continually until the shift is completed everyday, month-to-month and year-to-year.

(1) Pre-plan

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NOTE: Show slide, “Pre-Planning.”

It is important for a law enforcement agency to have developed a plan of response prior to an event occurring, instead of reacting in an unorganized and chaotic manner. Pre-planning can be established in two ways:

(a) Emergency response plans

An old saying in football tells us that “the best defense is a good offense.” Pre-planning is not exactly the same as offense; it is really more of a planned defense. However, our experiences with WMD incidents and other emergencies and crises suggest that the worst possible time for planning is when you have to execute flawlessly and quickly.

Terrorists often strike unanticipated targets; in most cases they strike at unanticipated times. So, the planning process can only take us so far in preparing a response. However, a WMD incident has characteristics common to most others. Our planning focus should rest on those common characteristics.

There is also some evidence to suggest that effective planning can actually deter terrorist attacks. Communities that have engaged in effective planning may not be easy to strike; in addition, such communities may be capable of implementing response operations that mitigate the impact of an otherwise successful attack. The better prepared you are, the most likely that terrorists will look elsewhere for attractive targets.

(b) Mutual aid agreements

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Mutual aid agreements have a deterrence value similar to that of effective emergency plans. When different levels of government and different jurisdictions agree in advance to help each other in the event of a threatened or executed terrorist attack, there is a greater likelihood that the impact of the threat or attack will be mitigated. Under such conditions, terrorists often look for more attractive targets.

(2) Intelligence gathering and sharing

NOTE: Show slide, “Intelligence Gathering and Sharing.”

Effective intelligence collection often provides warnings and indicators of a planned attack in time to implement aggressive counteraction. Terrorists who are planning WMD attacks must often engage in criminal activity during early stages of their preparation. Detection can lead to prevention. In some cases, terrorists who fear detection by law enforcement agencies will drop their plans and reorient on other targets in other areas.

(3) General indicators

NOTE: Show slide, “General Indicators.”

Law enforcement officers should continually look for indicators or signs of activity that could suggest a planned WMD attack. Those indicators can take many forms.

Terrorists historically conduct pre-operational surveillance prior to executing an attack. This surveillance can take many forms, from videotaping a potential target location to sketching floor plans, taking still photographs of structural features and taking notes on security force activity.

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NOTE: Show slide, “Reporting Suspicious Behaviors.”

Law enforcement officers should observe the areas around potential targets for any of the behaviors described above. In addition, liaison should be established with site security managers and officers; law enforcement officers should encourage them to report any such suspicious activity for patrol or investigative follow-up:

- (a) Explosive materials stored at a location where they normally would not be stored;
- (b) Chemicals that are typically used to fabricate explosives;
- (c) Chemicals that are typically used to fabricate chemical agents;
- (d) Devices or items that could be used to disperse chemical or biological agents, stored in a location where such items wouldn’t typically be stored;
- (e) A large number of photographs, maps or sketches of a building or site that could serve as a potential terrorist target;
- (f) Suspicious activity in a neighborhood – often a rented dwelling that is frequently unoccupied, occupied by residents atypical of the neighborhood, used to store unused material (industrial or commercial material), or occupied by residents whose “comings and goings” occur at unusual times (obviously, these attributes do not, by themselves, prove the presence of unlawful activity);
- (g) Suspicious orders for precursors used to fabricate chemical agents or biological

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materials that could be used in a terrorist attack.

- (h) Law enforcement officers should familiarize themselves with dates that could be important to terrorists. For example, the Oklahoma City bombing occurred on the anniversary of the FBI assault on the Branch Davidian compound in Waco.
 - (i) Any time officers make a traffic stop, they should look for contraband items that are in plain sight in the vehicle. Likewise, when conducting legal searches, (with consent or warrant), law enforcement officers should look for suspicious items that could suggest preparation for a WMD attack (remember, however, that searches conducted with a warrant may limit specific areas of search and may limit the items that can be seized during the search). While on patrol, officers should look for suspicious vehicles, equipment and materials that could suggest preparations for imminent execution of a WMD attack.
- (4) Dispersal devices used to disperse chemical and biological agents

NOTE: Show slide, “Dispersal Devices.”

There are a wide variety of methods/means for dispersing chemical and biological agents. In order for a dispersed chemical or biological agent to affect human targets, the chemical or biological material must take one of four routes into the body:

Inhalation – breathing of airborne agents;

Ingestion – taking by mouth;

Skin absorption – exposure through the skin;

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Injection – a dermal puncture involving the introduction of a life-threatening agent.

One of the most effective methods for dispersing these agents is through aerosol dispersion which produces an airborne (inhalation or skin absorption) hazard. Agents can also be sprayed in liquid form onto surfaces. The later method is particularly effective for persistent chemical agents.

Commercially available agricultural spray equipment can be use to spray just about anything. The typical aerial applicator mounted on aircraft has dozens of nozzles that can produce a particle size from 2 to 6 microns. This particle size is ideal for spreading organo-phosphate products or equivalent nerve agents (neurotoxins), as well as biological agents such as anthrax spores. There are also large vehicular mounted spraying systems for ground delivery of pesticides. There are no restrictions on sale or purchase of these units and they are sold all over the world for agricultural use.

Commercially available spray tanks and bottles come in a variety of sizes and can be equipped with timing devices, or mechanical or electronic triggering mechanisms for self-initiated, time delay operation. Small household sprayers, aerosol cans, and larger commercial sprayers used to apply pesticides, weed killers or fertilizers over extended areas all could be used to disperse chemical or biological agents. When this type of equipment is found at a location where it is not typically stored, handled or used, it should attract some attention. However, law enforcement officers should not tamper with or handle suspicious spray devices; they should be evaluated and processed by specialists who have appropriate experience and training.

Improvised spray equipment may be concealed under clothing on the body and triggered by the seemingly innocent extension of an arm to remove

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food from a serving aisle or line. A concealed dispersion device was used in a domestic incident to disseminate bacteria along a restaurant service line. Over 700 people became ill after ingesting the bacteria. The terrorist responsible for this incident would have caused far more damage if he had used Ricin or some other, more deadly agent.

(5) Radiological dispersal devices

A radiological dispersal device (RDD) uses conventional explosives to spread radioactive contamination. When the radioactive materials are packed around conventional explosives, and detonation occurs, an RDD can disperse radioactive material over a wide area, which is commonly referred to as a “dirty bomb.” Radiological dispersion using this technique is a far more likely scenario than the detonation of a nuclear weapon. Material required for dispersion is far easier to obtain than the weapons grade material required to produce a nuclear detonation.

b) Notification

NOTE: Show slide, “Notification.”

In typical situations involving law enforcement response, dispatchers provide limited information to responding officers; those responding officers are responsible for collecting detailed information concerning the incident after they arrive at the scene. WMD incidents (or suspected WMD incidents) are different. Responding officers must be provided information as they move toward the incident scene. For example, they must be provided wind speed and direction if some form of vapor contamination is suspected or anticipated. Officers need that information to plan their response route – moving from upwind toward the incident scene. Officers need this information for safety; in addition, the information is critical for planning the first actions as incident scene commander upon arrival. The following information is essential for an effective response:

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- (1) Date and time of notification
 - (2) Who received the notification
 - (3) Who provided the notification
 - (4) Detailed location information
 - (5) Type of incident (explosion, incendiary incident, suspected chemical or biological incident, etc.)
 - (6) Weather information (wind speed, direction, temperature, humidity, precipitation, short range forecast, etc.)
 - (7) Victim information (number of victims, number of potential victims, nature of injuries, etc.)
 - (8) Evacuation status (has facility been evacuated, location of evacuees relative to the threat, etc.)
 - (9) Vulnerable locations (child care centers, nursing homes, hospitals, etc., in the vicinity)
- c) Response

NOTE: Show slide, “Law Enforcement Response.”

Isolate: The most important first step in law enforcement response is isolation. Isolation involves conducting initial evacuations, establishing an initial perimeter for the crime scene, controlling crowds and identifying suspects, victims and witnesses. It is critically important that law enforcement officers perform their tasks at the incident scene in a manner that minimizes personal risk. *A dead or injured law enforcement officer is of no value to anyone else!*

- (1) Initial evacuation

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For isolation distances refer to the *North American Emergency Response Guidebook*, Guide 111.

(2) Establish initial crime scene perimeter

Factors to consider when establishing initial crime scene perimeters are the ultimate configuration of isolation zones as an incident response progresses. Normally, a hot, warm and cold zone will be established at the incident scene with the hot zone encompassing the incident site and the area of major contamination. In addition, at least one access corridor will be created with a concurrent decontamination corridor for use when evacuating persons requiring decontamination. The inner and outer perimeters should encompass the hot and warm zones. Inside the warm zone will be a Victim Collection Area. This is where first responders should direct victims. Here is where medical triage will occur for walking injured.

(3) Crowd control

(a) Expect mass hysteria

(b) Five types of people:

i) Victims

ii) Suspects

iii) Friends/family

iv) Well-intentioned citizens

v) Curious

(c) Quick control to prevent:

i) Death

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ii) Injury

iii) Contamination

(4) Identifying suspects, victims and witnesses

Law enforcement officers should focus their attention, to the extent possible, on people moving away from the incident scene. Individuals behaving in a suspicious manner (for example, individuals who appear totally focused on the incident scene, to the exclusion of all else around them) should be stopped and questioned. Anyone showing symptoms of injury or contamination by a WMD agent should be retained in designated areas for triage and treatment. Anyone who could have knowledge of the WMD incident should be questioned before they depart the area.

(5) Crime scene preservation

NOTE: Show slide, “Crime Scene Preservation.”

(a) Define and secure the scene perimeter

(b) Observe and identify

(c) Document and preserve

(d) Maintain chain of command

These requirements are common to all crime scenes. Obviously, one of the first actions required at the scene is to define the crime scene area and mark the perimeter. If this is not accomplished, evidence is likely to disappear and unauthorized persons are likely to contaminate evidence that remains in the area.

It is normally best to over-estimate the size of the crime scene and withdraw to a smaller area as the

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investigation continues. Such a strategy increases the probability that important evidence will be recovered before it is contaminated. As a rule of thumb, the crime scene for a WMD incident should initially extend over an area that includes:

- The *potential* locations of *all* evidence (remember that this can extend for hundreds or thousands of feet from ground zero)
 - All areas of potential contamination by WMD materials
 - Crime scene preservation
- (6) Other items to be concerned with regarding crime scene preservation include:
- (a) Evidence contamination
 - (b) Packaging materials
 - (c) Secondary devices
 - (d) Suspicious articles
 - (e) Suspicious activity
 - (f) Victims/bodies
- (7) Information to obtain

NOTE: Show slide, “Information to Obtain.”

- (a) Sequence of events
- (b) Smoke or vapors
- (c) Unusual tastes or odors

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- (d) Unexplained symptoms of illness such as coughing and choking, difficulty breathing, dizziness, nausea and/or vomiting, loss of consciousness, large number of dead or dying insects or small animals
- (e) Containers, spray devices, laboratory equipment
- (f) Description of fires (color of fire or smoke)
- (g) Out of place person(s) or things
- (8) Provide information to dispatchers, supervisors, and other responders

Provide ongoing situation reports (SITREPS), including:

- (a) Who
- (b) What
- (c) When
- (d) Where
- (e) How
- (9) Information to report

The following information is critical and must be widely disseminated among emergency responders:

NOTE: Show slide, “Information to Report.”

- (a) Nature of incident
- (b) Contaminated areas
- (c) Wind direction and speed

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- (d) Best approaches to scene
 - (e) Description of crime scene perimeter
 - (f) Number and location of victims
 - (g) Suspect description
 - (h) On-scene responders
 - (i) Crowd control/scene security
 - (j) Secondary devices
- d) Recovery

NOTE: Show slide, “Recovery”

The recovery phase begins when the scene is stabilized and the last victim is transported to a medical facility; it ends with the completion of a contamination survey. Principal challenges during this phase include re-establishing essential services, coordinating actions with state and federal authorities, decontaminating essential equipment and collecting evidence.

Returning the affected community back to normalcy (pre-incident conditions) remains the primary focus for recovery operations. What may be unique regarding terrorist incidents and recovery is who becomes responsible for directing this phase of operation. Identification of the individual or agency responsible for directing recovery is based upon many factors.

On-going crime scene investigations will likely place law enforcement as the responsible command lead. As mentioned earlier, the FBI is likely to function as the lead agency with local law enforcement acting in a support role that could include:

- (1) Providing perimeter security

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- (2) Providing manpower to support searches and related operations
- (3) Assisting in damage assessment
- (4) Providing on-site law enforcement support (detention and/or arrest of trespassers, etc.)

The recovery phase can be a difficult period for law enforcement officers. With the pace of operations somewhat diminished from the response phase, there is more time for officers to reflect – to review what has happened and assess their own performance. Some questions are almost certain to surface: Could I have done anything better? Would a different action or approach in a situation have saved lives or limited the number and severity of injuries?

This is also the time when victims' families are likely to arrive at the incident scene in an attempt to reach "closure" on their losses. Some will insist on access to dangerous areas. Others will quietly cooperate with any direction provided by authorities. Sensitivity is a key attribute in these situations. All citizen interactions must be tempered by the knowledge that many "visitors" to the incident scene have suffered catastrophic losses. Security must be provided and laws must be enforced. However, how law enforcement officers perform their responsibilities will have lasting impact on the lives of many in the community and on the police-community relationship that is essential for successful policing.

- e) Restoration

NOTE: Show slide, "Restoration."

The restoration phase begins with the completion of the contamination survey and ends when complete hazard remediation has been accomplished. Restoration involves elimination of contamination and the restoration of the incident site to its original state.

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The restoration phase involves the following actions:

- (1) Aiding in the restoration of critical services
- (2) Restoring normal operations
- (3) Restocking resources expended during the WMD incident
- (4) Replacing damaged, lost and contaminated equipment
- (5) Modifying the agency response plan based on “lessons learned”
- (6) Establishing safeguards to deter WMD attacks in the future
- (7) Providing counseling for agency personnel affected by the WMD incident
- (8) Restructuring the department’s policy and procedures manual to reflect positive change for handling similar events in the future
- (9) Critiquing the incident internally, then in a public forum, to reassure the public that normalcy has been restored.

Termination of incident response occurs as part of the restoration phase. Termination should be accomplished using established procedures that detail every step of the process. All previous actions must be fully documented – from first responders to the conclusion of operational requirements.

Termination procedures should include the debriefing of all response personnel from the law enforcement community, formal and informal critiques of response activities, and an after action report that documents all “lessons” learned.

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Documentation is critical to determining the eventual resolution of a WMD attack. This documentation serves as a living record to modify and enhance future response procedures.

D. Responding to Bomb Threats and Suspicious Objects

NOTE: Show slide, “Responding to Bomb Threats and Suspicious Objects.”

Note: G.S. 14-69.1: It is unlawful by any means of communication to make a report, knowing or having reason to know the report is false, that there is located in or in sufficient proximity to cause damage to any building, house or other structure whatsoever or any vehicle, aircraft, vessel or boat any device designed to destroy such building, house or structure or vehicle, aircraft, vessel or boat by explosion, blasting or burning.

Note: § 14-288.21: It is unlawful to manufacture, assemble, possess, store, transport, sell, purchase, deliver, or acquire a nuclear, biological, or chemical weapon of mass destruction.

Note: § 14-288.23: It is unlawful to make a false report concerning a nuclear, biological, or chemical weapon of mass destruction. Persons found guilty are sentenced under a Class D felony.

Note: § 14-288.24: It is unlawful to perpetrate a hoax by use of false nuclear, biological, or chemical weapon of mass destruction. Persons found guilty are sentenced under a Class D felony.

1. The officer should proceed to the location as rapidly as is prudent, in accordance with departmental policy and state law.
2. All communications regarding bomb threats, bombs, or suspected bombs should be done by landline telephone whenever possible. There should be no radio transmissions in the area. This includes, but is not limited to, portable radios, mobile telephones, radar, mobile data terminal (MDT) or television transmissions.
3. Upon arrival, contact the **person in charge**. Do not be delayed discussing the nature of your business with receptionists, secretaries, etc. Politely and courteously insist on talking to the person in charge immediately.

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Upon contact with the person in charge, determine their opinion regarding the seriousness of the bomb threat. Also determine whether or not a search has been initiated and, if so, who is conducting the search. Inform the person in charge that it is best if those familiar with the premises conduct the search.

Remember, you are there in an advisory capacity and all decisions regarding the safety of the property and employees must be made by the person in charge.

- a) If circumstances warrant, you should advise the person in charge to consider the necessity of evacuation.
 - b) If the person in charge decides to evacuate and seeks your advice, you should advise them to remove all unauthorized and unnecessary personnel a minimum of 300 feet from the building.
 - c) If a suspicious package is found, the evacuation zone should be increased, depending upon the size of the package, the availability of cover and physical protection, location, and other nearby hazards such as fuel and chemical storage. Traffic should be diverted around the evacuation zone.
4. Suggest that a search of the business conducted immediately and advise the person in charge that you will stand by until a search has been completed to provide advice, as needed, regarding the ongoing search.

Again, advise the person in charge that conducting the search of the premises is that person's responsibility and that the officer will not actively participate in the search operation unless required to by the circumstances. If required, the officers will advise the person in charge and search personnel as to appropriate search procedures.

- a) Alert the supervisory and custodial personnel to assist in directing the search.

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- b) A central location or command post should be established. This is where the person in charge, the custodial personnel, appropriate supervisory personnel (if necessary), and the responding officer should be located. The command post or central location should have a telephone. The search teams should be aware of this location and the telephone number.
- c) If the threat indicated the location of the bomb, that location should be investigated first by the designated searcher.
- d) If no location was indicated, it is suggested that the general areas to be searched proceed with the following priorities:

NOTE: Show slide, “Building Searches.”

- (1) The building exterior
- (2) Public access areas, i.e., lobbies, restrooms, etc.
- (3) Stairwells
- (4) Engineering spaces, including janitors’ closets and lockers
- (5) Areas normally occupied on a continuing basis by employees are the least likely to be affected and should be the areas searched last.

- 5. Try to determine:

NOTE: Show slide, “Try to Determine.”

- a) The exact time of the call
- b) The exact words of the caller
- c) The caller’s voice characteristics
- d) Was the voice familiar?

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- e) Were there any background noises?
 - f) The name of the person receiving the call
 - g) The receiver's telephone number
 - h) Date of the call
6. If a suspicious package or an item that is out of the ordinary is located, expert assistance should be obtained by notifying and dispatching the bomb squad to the scene. Agencies that may be called for such assistance are:
- a) Local bomb technicians, if available.
 - b) State Bureau of Investigation (SBI)
 - c) Explosives Ordnance Detachment (military)

7. Suspicious letters and packages

NOTE: Show slide, "Suspicious Letters and Packages."

Suspicious letter and parcel recognition points (bomb, biological or chemical)

- a) Powdery substance on exterior portion of package
- b) Package or envelope is unexpected or from someone unfamiliar to addressee
- c) Excessive postage
- d) Cancellation stamp or postmark and return addresses indicate two different locations
- e) No return address or one that cannot be verified as legitimate
- f) Foreign mail, air mail and special delivery mail, especially when the recipient is not expecting such a package

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- g) Misspelled common words.
- h) Handwritten (distorted or poorly written); poorly typed labels; cut and paste lettering
- i) Incorrect title/position for addressee; or only title (i.e., Director) of addressee listed
- j) Excessive or unnecessary markings such as “Confidential,” “Private,” “Open Immediately,” “Open Here,” etc.
- k) Excessive or unusual bulk, weight or balance
- l) Unusual size and/or shape (lopsided or uneven envelope)
- m) Tube type packages heavier at one end
- n) Round, cylindrical and angular contours
- o) Oily stains or discoloration of envelope from unknown fluid
- p) Odor emanating from package/envelope
- q) Suspect package/envelope contains tinfoil
- r) Package/envelope contains visual distractions (money, pornography)
- s) Excessive securing materials (tape, string, etc.)
- t) String or twine passing through package/envelope

E. Search Procedures

While it may not be appropriate for an officer to take an active part in most bomb threat searches, **every officer should be aware of methods of conducting an effective search operation.**

1. Building search

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NOTE: Show slide, “Building Searches.”

- a) Search operations should start at the exterior and work toward the interior.
- b) Once on the inside, searching operations start from the lowest level and work up.
- c) The interior search should begin with those areas most accessible to the public and areas containing service equipment (i.e., air conditioners, etc.).
- d) Consideration should be given to marking those areas already searched to avoid duplication.
- e) When searching use caution. Any property moved should be done with extreme caution.
- f) Whenever your suspicions regarding a package are aroused, do not hesitate to obtain the assistance of the bomb squad personnel.
- g) Once an item is found, evacuate the immediate area and continue searching for additional items in unaffected areas until the entire building has been thoroughly searched.
- h) If a reported time of detonation is given, all unauthorized personnel (with exception of bomb squad personnel) will evacuate the area a minimum of 15 minutes prior to the reported time.
- i) Any officer assisting in or conducting a search in which no item was found **should not declare the area safe. The officer should only state that nothing was found.**
- j) **Finally, if an item (suspect package) is found, remember, don’t touch it. Notify the bomb squad personnel.**

NOTE: Show slide, “Do Not Touch Anything Suspicious.”

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2. Vehicle searches

NOTE: Show slide, “Vehicle Searches.”

- a) If a search of a motor vehicle for a bomb or explosive is necessary, the officer or untrained persons should not attempt this operation.
- b) Leave the vehicle alone and request that bomb squad personnel make the search.
- c) Establish a perimeter surrounding the vehicle.

3. Examining suspicious and potentially dangerous objects

NOTE: Show slide, “Examining Suspicious and Potentially Dangerous Objects.”

- a) The officer should always be aware of the hazards involved when examining a suspicious package.
- b) Don’t move it or touch it.
- c) Don’t turn lights on or off in the area.
- d) Note the particulars about the item, i.e., size, shape, color, unusual writing or numbers, and exactly where it is sitting.

NOTE: At this time a practical exercise is conducted allowing the students to demonstrate response and search procedures for bomb threat in a building.

F. Recognition of Explosive Devices

1. Definitions

Explosion – The sudden and rapid escape of gases from a confined space, accompanied by high temperatures, violent shock, and loud noise.

- a) Explosion types

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NOTE: Show slide, “Explosion Types.”

- (1) Mechanical explosions

Examples: pressure cooker, steam boiler

- (2) Chemical explosion

Examples: Dynamite, TNT, C-4, ANFO, Black powder

NOTE: Show multiple slides of manufactured explosives.

THIS IS THE MOST LIKELY TYPE OF EXPLOSION TO BE ENCOUNTERED BY LAW ENFORCEMENT PERSONNEL.

- (3) Atomic explosion

Example: Atomic bomb

- b) The nature of chemical explosions

- (1) An explosion is merely a rapid form of combustion. Ordinary combustion is simply a slow form of explosion. **The speed of the burning action constitutes the difference between combustion, explosion and detonation.**

- (2) Low explosives have a detonation velocity rate below 3,280 feet per second.

EXAMPLES: Black powder, smokeless powder, etc.

- (3) High explosives have a detonation rate above 3,280 f.p.s.

EXAMPLE: Dynamite - about 9,000 f.p.s.; RDX - 27,500 f.p.s.)

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2. Destructive devices

a) Explosive devices

- (1) Instructions on how to manufacture explosive devices are readily available on the internet and books in print.
- (2) Commercial explosives are also readily available. There are stringent federal controls at the dealer and manufacturer levels with regard to storage.
- (3) Some of the most common high explosives are commercial dynamite and trinitrotoluene (TNT). These explosives have a variety of legitimate uses. Problems arise with poor storage by legitimate purchasers. There are a significant number of thefts each year.
- (4) Initiating devices – electric and non-electric
- (5) Pipe bombs – 70% of all bombs in the U.S. are black powder pipe bombs.
 - (a) Materials are easily available. Black powder and a variety of ignition devices are available.
 - (b) Easy to transport and conceal.
- (6) Other types of containers with a variety of ignition devices can be used with low or high explosives.
- (7) Booby traps – Explosive devices designed to be detonated by unsuspecting victims.

b) Incendiary devices – fire bombs

- (1) May be difficult to spot. They can be ordinary materials found in every household and have very legitimate uses.

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- (2) Incendiary devices can be made from the simplest combustibles.
 - (a) Tissue paper and match
 - (b) Road flare and model rocket fuel
 - (c) Sugar and potassium chlorate in a cigarette pack
 - (d) Soap flakes mixed with gasoline

III. Conclusion

A. Summary

The law enforcement officer may answer many of these hazardous materials, bomb threat or WMD calls and should keep the following in mind:

- Take only the actions that you know to be safe.
- Keep unnecessary personnel out of the area.
- Contact the appropriate agency or person as soon as possible to assist in neutralizing the hazard.

NOTE: Show slides, “Training Objectives.”

B. Questions from the Class

NOTE: Show slide, “Questions.”

C. Closing Statement

This class is not intended to make the student an expert in hazardous materials, explosive devices, weapons of mass destruction or fighting fires. It does give the officer a basic awareness of what materials may be encountered and the methods for a safe response to them. **Officers should never attempt to respond in a manner that exceeds their capability or training.**